Maintenance of human embryonic stem cells by sphingosine-1-phosphate and platelet-derived growth factor.

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Public Summary:
Embryonic stem cells are pluripotent and capable of indefinite self-renewal in vitro. Human embryonic stem cells (hESC) have generally been cultivated on feeder layers of primary mouse embryonic fibroblasts (MEF) in media supplemented with fetal calf serum (FCS). However, serum contains a wide variety of biologically active compounds that might adversely affect hESC growth and differentiation. Thus, cultivation of stem cells in FCS complicates experimental approaches to define the intracellular mechanisms required for hESC maintenance. This chapter describes the serum-free maintenance of hESC in culture by addition of sphingosine-1-phosphate (S1P) and platelet-derived growth factor (PDGF). This complete protocol provides a chemically defined serum-free system that is advantageous for studying signaling pathways involved in hESC pluripotency.

Scientific Abstract:
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